

FITZWILLIAM (WENTWORTH) ESTATES

BRADFIELD MOORLAND REGENERATION SCHEME

NON-TECHNICAL SUMMARY VOLUME IV



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This project has been undertaken in accordance with PAA policies and procedures on quality assurance.

Signed: _____

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1. INTRODUCTION

- 1.1 This Non-Technical Summary provides a brief description of the purpose and nature of the Bradfield Moorland Regeneration Scheme, a short resume of the work carried out for the Environmental Statement (ES) and a copy of the conclusions.
- 1.2 This ES is a revision of an ES published in June 2005 (PAA, 2005) in which it was proposed to restore 153ha of the 206ha Bole Edge Plantation SSI to moorland.
- 1.3 The original proposal was rejected by the Forestry Commission after receiving responses from statutory consultees. A decision was made not to appeal against this decision.
- 1.4 The Estate, after consultation with the Forestry Commission, revised the felling proposal to include only 69ha of conifer plantation to be restored to a mosaic of moorland vegetation managed as a grouse moor with 136ha of the Bole Edge Plantation SBI being retained. This retained woodland includes both conifer plantation and semi-natural broadleaved woodland.

2. PURPOSE AND NATURE OF THE PROPOSALS

- 2.1 The project proposes to restore 69ha of conifer and broadleaved plantation located on the eastern fringes of the Peak District National Park to a mosaic of dry dwarf shrub heathland, wet heath and mire communities to be managed as a grouse moor. In the longer term, the restored area is likely to become part of the wider Environmentally Sensitive Area designation, managed with light grazing and occasional burning.
- 2.2 Approximately 136ha of existing semi-natural broadleaved woodland and conifer plantation would be retained and enhanced through a programme of re-planting, natural regeneration and appropriate long-term management under a Woodland Grant Scheme.
- 2.3 The area to which the ES relates covers approximately 206ha (see Figure 1.1 – Site Location Plan). It is surrounded to the north, west and south-west by open and semi-open moorland currently managed as a grouse moor, and designated as a SSSI, cSAC and SPA, and to the south-east by Mortimer Road. Further to the south and east are small fields, and Strines Reservoir, a public water supply managed by Yorkshire Water Services.
- 2.4 The scheme would be implemented in phases, involving a process of tree felling and extraction, and subsequent restoration to moorland, over a period of three years. The various elements of the scheme are described briefly below under the headings:
- Felling;
 - Restoration; and,
 - Long Term Management.

Felling

- 2.5 The felling proposals involve clear-felling and extraction conifer and broadleaved timber, with the exact method of working dependant upon the size of trees to be felled, the topography and the ground conditions within each felling compartment.
- 2.6 A concept plan which guides the location, direction and phasing of felling has been developed in line with the Forestry Authority document 'Forest Design Planning' (see Figure 3.2).
- 2.7 The felling would be completed over a period of three years, with buffer strips of existing woodland being left adjacent to watercourses. Within these buffer strips, conifers would be gradually removed with broadleaved trees being planted and thinned to maintain continuous cover. Restoration to moorland would follow progressively behind felling.
- 2.8 Detailed Harvesting Plans and Method Statements would be prepared to set out working methods and measures to overcome any environmental constraints, and the felling process would be subject to on-going monitoring and review by the Estate. It is likely that a combination of extraction methods including extraction by forwarder and skyline would be employed, with processing *in-situ* or on the roadside before haulage of timber off-site. The trees would be felled to ground level with the stumps left *in-situ*.
- 2.9 The method of brash management has changed significantly from the previous proposal. Up to 50% of the brash generated could now be chipped and transported to a Yorkshire Water Services composting scheme. The remainder of the brash will be either burnt in specially

designed trailers mounted on feet, chipped or in the area of young plantings pushed into windrows which would be mulched, burnt or chipped. The trailers used for the burning would reduce the amount of smoke due to the high burning temperatures and the trailers are mounted on feet to reduce the size of the burn footprint left by the trailer. The ash from the burning operations is to be stored on areas of hard standing for disposal off-site. These areas would be earth banded to reduce the chance of leachate reaching the water courses.

Restoration

- 2.10 Restoration of the clear-felled areas to moorland would commence immediately after felling has taken place to minimise the length of time that the ground is left bare, and to avoid excessive regeneration of woodland vegetation prior to moorland establishment. The objective is to provide a mosaic of heathland habitats including dry, dwarf shrub heath, wet heath and mire communities, with the dry heathland community supporting a mixture of heather, bell heather, cowberry and bilberry. Target species for wetter areas are cross-leaved heath with heather, cotton grasses and *Sphagna*.
- 2.11 Following approval of the proposals by the Forestry Commission, detailed Method Statements would be prepared after felling to allow for the ground conditions to be adequately assessed for moorland restoration. These statements would include environmental management requirements and detailed programming. However, in essence the restoration would largely be achieved by adding seed to the clear felled areas to supplement regeneration of the seed bank already present beneath the woodland canopy, and would be carried out by Geoff Eyre, a local contractor with extensive experience of successful moorland restoration and management in the area.
- 2.12 Control of invasive species regeneration, such as bracken, birch and conifer, is likely to be required during the early establishment phase. Light grazing with sheep would be introduced, potentially from the second year after heather establishment although this would depend on specific area by area requirements. Temporary fencing would be used to contain sheep in each clear felled area.

Long Term Management

- 2.13 Approximately 136ha of retained conifer and broadleaved woodland would be managed under a continuous cover regime, through natural regeneration of birch and rowan and associated ground flora, supplemented with planting of broadleaved species such as pedunculate oak.
- 2.14 An important feature of all areas of woodland would be to maintain a gradual, uneven interface of scrub vegetation and natural regeneration between woodland and moorland boundary. These 'edge' habitats would be particularly important for nightjar.
- 2.15 An application has been made to have the restored area of moorland entered onto the Rural Land Register. In the long term, the felled area would be integrated with management of the existing moorland and farmed as a whole with an associated expansion of the flock to achieve grazing densities complimentary to the habitat.
- 2.16 Once the moorland has established and reached about 25-30cm in height, it would be burnt on rotation following a typical regime for grouse moor management, excluding any areas of wet heath, mire or bell heather.

3. ENVIRONMENTAL IMPACT ASSESSMENT

3.1 The EIA methodology and production of the ES has followed the guidelines for undertaking EIA prepared by the Forestry Commission (Forestry Commission 2001). The process has involved a scoping exercise to identify the key issues to be addressed, collection of baseline data through a combination of desk study and field investigation, analysis and evaluation of significant impacts and development of detailed mitigation measures in consultation with the Forestry Commission, Yorkshire Water Services and others.

3.2 The proposals have evolved throughout the EIA process to take account of significant environmental issues, resulting in a 'designing out' potential adverse impacts as far as possible. Residual impacts which cannot be mitigated have been identified, and measures proposed to monitor and respond to environmental constraints and residual risks if they are encountered. The issues addressed in the ES are:

- Soils;
- Hydrology and water quality;
- Ecology;
- Landscape;
- Archaeology; and
- Community issues, including highways.

Soils

3.3 The proposed felling is likely to cause direct disturbance to the existing soil profiles across the site as a result of vehicle movements, harvesting and removal of trees, brash management and construction of crossing points over watercourses which would result in mixing of the litter and upper soil layers.

3.4 In the drier, flatter parts of the site, this is desirable to create a suitable surface for heather regeneration and would be deliberately encouraged. In wetter, steeper parts of the site, and over peat soils in Brogging Moss, this may lead to problems with soil erosion and sediment laden run-off into watercourses, resulting in changes to water quality. Throughout the duration of the project, the impact of felling on soils would be closely monitored. Brash dams or straw bales would be used to provide localised soil erosion control where required and felling would temporarily cease if significant erosion problems became apparent.

Hydrology and Water Quality

3.5 The study area lies within the upper catchment of the River Loxley, which is a major tributary of the River Don and receives a high annual rainfall. The western part of the study area is dissected by a number of deeply incised streams arising in the adjacent moorland to the east and feed eventually via Holling Dale Brook into Strines Reservoir. The streams are characteristically 'flashy' in nature, responding rapidly to storms and triggering high-rate runoff from the peat moorlands to the west.

- 3.6 A number of concerns for water quality were identified in the revised ES, and in developing the scheme for the felling and extraction of timber, together with the restoration of the moorland, measures have been integrated that would limit the risk of significant changes to the hydrological regime and water quality character of the study area.
- 3.7 During the felling phase these measures include best practice management of fuels, oils and any other potentially polluting substances, measures to minimise the amount of brash disposed of by burning, and controlled burning of brash where this must be carried out, measures to limit the extent of exposed soils during felling, timing of felling to avoid the wettest periods, retention and/or establishment of buffer zones adjacent to watercourses, hipped slopes to minimise soil and water movement downslope, use of brash dams or straw bails to trap sediment and construction of cross-drains and sediment traps to intercept surface run-off.
- 3.8 Other measures in the longer term include controlled use of herbicide to manage weed growth during the moorland establishment phase, and gully blocking proposals to off-set the risk of discoloration of water during felling.
- 3.9 On the granting of consent for the works by the Forestry Commission, a network of water quality sampling points would be established. Records from daily and monthly sampling would be regularly reviewed by a competent environmental scientist, who would, as necessary, recommend appropriate modifications to the water quality management systems.

Ecology

- 3.10 The majority of the study area falls within Bole Edge Site of Scientific Importance (SSI). The main habitats identified during the assessment are:
- Conifer Plantation;
 - Semi-natural and Plantation Broadleaved Woodland;
 - Wet Flush with Sphagnum Communities;
 - Woodland Rides; and
 - Stream Valleys.
- 3.11 The study area was found to support a diverse assemblage of 30 bird species including two priority UK Biodiversity Action Plan species – song thrush and nightjar and two Schedule 1 species – goshawk and crossbill. A further Schedule 1 species, hobby, was recorded flying over the site. Other species of interest include northern hairy wood ant and mountain hare. Key issues considered in the ES are the potential impact of the change from a predominantly wooded habitat to one of open moorland on the existing assemblage of bird species, impact on the habitats associated with the SSI, disturbance to Schedule 1 bird species during felling and disturbance to habitats for the hairy wood ant habitat. The change in habitat type is quantified in Table 1 below.

Table 1. Schedule of Habitat Losses and Gains

Habitat	Existing Extent	Proposed Extent	Change	Nature of Change	Comments
Conifer and Broadleaved Plantation	195ha	136ha	Decrease of 69ha	Permanent	Gradual change through phased felling
Semi-natural Woodland (incl. Ancient Woodland)	10ha	10ha	No significant change in extent	None	There would be some regeneration and planting within buffer strips adjacent to stream valleys
Heather Moorland	None	69ha	Increase of 69ha	Permanent	Gradual establishment following felling

- 3.12 Measures to mitigate for predicted adverse impacts on ecology, particularly bird species, have been incorporated as far as possible within the layout and phasing of the felling proposals, and in the development of the long-term management proposals for the restored moorland and retained woodland. These include the retention of core blocks of woodland, and gradual phasing of felling to enable species to relocate.

Landscape

- 3.13 A landscape assessment of the study area identified that it sits within a wider area of open moorland and upland wooded valleys dominated by Strines and the adjacent Dale Dike reservoir. The open moorland of Bradfield Moors is dominated by the high level, gently sloping plateau incised with narrow, often vegetated cloughs. Long ridges with frequent rock outcrops dominate the skyline and the area gives rise to expansive, uninterrupted views. The study area forms a blanket of uniform and regular forest cover that encroaches far into the open moor as well as down into the main east-west valley in which the reservoirs are situated.
- 3.14 A number of potential visual receptors to the proposals were identified, and a Zone of Visual Influence (ZVI) map prepared to illustrate the scope of visibility more precisely. Photomontages to illustrate the visual effect of the scheme were prepared for three different locations.
- 3.15 The ES considered the magnitude of landscape impacts against the sensitivity of the main visual receptors to provide an overall assessment of significance of landscape impact from the three key points – Hoarstones Road, Foulstone Moor and Sugworth Road.
- 3.16 The final layout of the proposals has been strongly influenced by the landscape assessment to ensure that it complies with the principles for Forest Landscape Design developed by the Forestry Authority.

Archaeology

- 3.17 An archaeological survey of the study area revealed a total of 45 archaeological features of local importance within the study area comprising ditch systems, holloways, stone walls, bridges, quarry areas or pits, a cave and an inscribed stone. These appear to represent predominantly post-medieval activity, with some features, such as the holloways, possibly originating in the medieval period. No evidence of prehistoric activity was encountered and no features of national archaeological importance were recorded.

- 3.18 A number of the archaeological features would potentially be affected by the proposals and measures are proposed to avoid or minimise inadvertent damage or disturbance.

Community and Highways

- 3.19 There are two public footpaths within the study area, and a discretionary footpath within Bole Edge Plantation that runs parallel to Mortimer Road. The principal road serving the proposed felling area is Mortimer Road which links to the A57 to the south.
- 3.20 The key issues for the public and highways associated with the proposals are felling works close to footpaths and an increase in haulage loads using the public highway during the felling period. Mitigation measures proposed include the erection of signage to warn the public and liaison with the local community and Highway Authority, and cleaning debris from the public highway.

Alternatives

- 3.21 The ES considered the alternative approaches of 'do nothing' and maintaining a woodland cover but converting to native broadleaved woodland but these were rejected.

4. CONCLUSIONS

- 4.1 Table 2 below provides a brief summary of the overall residual risks and impacts associated with the proposals, which assumes that the mitigation described in the ES is fully implemented.

Table 2 Summary of Residual Risks and Impacts

Issue	Summary of Residual Risks and Impacts
Soils	Possible low risk of erosion in vulnerable areas
Hydrology and Water Quality	Unquantifiable risk of discoloration from peat oxidation and re-wetting Possible low risk of sedimentation resulting from soil erosion Possible low risk of reservoir tainting/leachate from brush burning Low risk of contamination from fuel/chemicals/pesticide Low risk of decrease in nitrate uptake due to reduced tree cover
Ecology	Loss of conifer and broadleaved plantation, although a core of woodland would be retained Reduction in area of suitable habitat for woodland bird assemblage and hairy wood ant Low risk of disturbance to nesting Schedule I species Increased area of moorland habitat Likely increase in extent of moorland habitat and numbers of moorland birds
Landscape	Change in view from Hoarstone Road not significant Slight to Moderate change in view from Foulstone Road and from Sugworth Road
Archaeology	Low risk of damage or disturbance to archaeological remains
Community and Highways	Low impact on public rights of way and highways

Soils

- 4.2 Overall, it is considered that the mitigation measures proposed to minimise the extent of bare soils exposed, and to minimise the risk of soil erosion in the most vulnerable areas, would result in a low residual risk of erosion and subsequent sediment laden run-off into watercourses.

Hydrology and Water Quality

- 4.3 With the exception of possible discoloration of water in the Foulstone Dike catchment, provided that the mitigation measures described are fully implemented, it is considered that the residual risks to water quality, and ultimately in Strines Reservoir are low. However, it is not possible to quantify the likely extent of changes in water colour resulting from peat oxidation and re-wetting, relative to its current colour levels. There still remains a residual unknown risk.

Ecology

- 4.4 The overall impact of the proposals on ecology is considered to be neutral in respect of the slight adverse impact on the woodland bird assemblage and the slight positive impact of the potential increase in available habitat for moorland birds. The slight adverse impact on the woodland bird assemblage is a result of the reduction in the area of suitable habitat available and temporary displacement of species during felling. The revision to the original proposal is significantly different with regard the woodland bird assemblage in relation to the amount of woodland habitat remaining, with approximately two-thirds of the existing woodland retained.

Whilst measures to phase the felling to facilitate relocation of species have been incorporated within the proposals and a greater proportion of the woodland is being retained in this scheme, the impact on absolute numbers of breeding birds cannot be quantified and remains an unknown outcome that would only be informed by future monitoring.

- 4.5 The benefits of moorland habitat creation are considered to negate the loss of conifer and broadleaved plantation habitat, in respect of the nationally recognised value of upland heathland, in contrast to the regional value of Bole Edge Plantation Site of Scientific Interest (SSI), and the contribution that the heathland would make toward meeting UK and Local Biodiversity Action Plan targets. It is not possible to quantify any increase in moorland bird numbers as a result of the change in habitat, so whilst this is a likely benefit of the proposals, any actual increase in numbers would only be determined through future monitoring.

Landscape

- 4.6 The impact assessment suggests that the landscape and visual impact of the proposals would be significant as opposed to not significant and that the degree of impact significance would vary from substantial in the case of views from Hoarstones Road to moderate/slight for views from Foulstone and Sugworth Road, dependent upon the proximity to the viewpoint and field of view.

Archaeology

- 4.7 There are not expected to be any adverse residual impacts upon archaeological features associated with the felling area.

Community and Highways

- 4.8 The residual impact upon Public Rights of Way and highways is expected to be low, provided mitigation measures are implemented as outlined in the report.